Attachment 1

NATOA Mark-up of Part 76 Proposed Rules

The following attachment contains revisions proposed by NATOA to the Notice's Appendix A ("Proposed Rules") and Appendix C ("Selected Tables from ANSI/SCTE 40 2011").

- The Commission's amendments to the Proposed Rules are in bold or strikethrough (as provided in the Appendix A to the Notice).
- Additions to the rules proposed by NATOA are underlined and highlighted. Deletions are marked with strikethroughs, as well as underlined and highlighted, to differentiate from the Commission's proposed deletions.

APPENDIX A

Proposed Rules

Part 76 of the Commission's rules are to be revised as follows:

PART 76 – Multichannel Video and Cable Television Service:

1. The Authority Citation for Part 76 continues to read as follows:

AUTHORITY: 47 U.S.C. 151, 152, 153, 154, 301, 302, 302a, 303, 303a, 307, 308, 309, 312, 315, 317, 325, 339, 340, 341, 503, 521, 522, 531, 532, 534, 535, 536, 537, 543, 544, 544a, 545, 548, 549, 552, 554, 556, 558, 560, 561, 571, 572, 573.

2. Revise § 76.55 to read as follows

§ 76.55 Definitions applicable to the must-carry rules.

* * * * *

Note to Paragraph (d): For the purposes of this section, **for over-the-air broadcast,** a good quality signal shall mean a signal level of either -45 dBm for analog VHF signals, -49 dBm for analog UHF signals, or **-61 dBm for digital signals (at all channels)** at the input terminals of the signal processing equipment~~, or a baseband video signal~~.

* * * * *

3. Revise § 76.56 (a)(1)(i) and (b) to read as follows

§ 76.56 Signal carriage obligations.

(a) * * *

(1) * * *

(i) Systems with 12 or fewer usable activated channels, as defined in §76.5(oo) ~~§76.6(oo)~~, shall be required to carry the signal of one such station;

* * * * *

(b) *Carriage of local commercial television stations*. ~~Effective June 2, 1993,~~ A cable television system shall carry local commercial broadcast television stations in accordance with the following provisions:

(1) * * *

* * * * *

4. Revise § 76.57 (e) to read as follows

§ 76.57 Channel positioning.

* * * * *

(e) At the time a local commercial station elects must-carry status pursuant to §76.64, such station shall notify the cable system of its choice of channel position as specified in paragraphs (a), (b), and (d) of this section. A qualified NCE station shall notify the cable system of its choice of channel position when it requests carriage. ~~Channel positioning requests from local commercial stations shall be fulfilled by the cable operator no later than October 6, 1993~~.

* * * * *

5. Revise § 76.64 (a) to read as follows

§76.64 Retransmission consent.

(a) ~~After 12:01 a.m. on October 6, 1993,~~ No multichannel video programming distributor shall retransmit the signal of any commercial broadcasting station without the express authority of the originating station, except as provided in paragraph (b) of this section.

* * * * *

6. Revise § 76.105 (b) to read as follows:

§ 76.105 Notifications.

* * * * *

(b) : Broadcasters entering into contracts ~~on or after August 18, 1988,~~ which contain syndicated exclusivity protection shall notify affected cable systems within sixty calendar days of the signing of such a contract. ~~Broadcasters who have entered into contracts prior to August 18, 1988, and who comply with the requirements specified in §76.109 shall notify affected cable systems on or before June 19, 1989.~~ A broadcaster shall be entitled to exclusivity protection beginning on the later of:

(1) * * *

* * * * *

7. In § 76.127, remove (f).

8. Revise § 76.309 (c) to read as follows:

§ 76.309 Customer service obligations.

* * * * *

(c) ~~Effective July 1, 1993,~~ Cable operators are subject to the following customer service standards:

(1) * * *

* * * * *

9. Revise § 76.601(b) to read as follows

§ 76.601 Performance tests.

(a) * * *

(b) The operator of each cable television system shall conduct complete performance tests of that system at least twice each calendar year (at intervals not to exceed seven months), unless otherwise noted below. The performance tests shall be directed at determining the extent to which the system complies with all the technical standards set forth in § 76.605~~(a)~~ and shall be as follows:

(1) For cable television systems with 1,000 or more subscribers but with 12,500 or fewer subscribers, proof-of-performance tests conducted pursuant to this section shall include measurements taken at six (6) widely separated points and shall include at least one test point per technically integrated hub, wire center, central office or similar distribution center and at least one test point in each local franchise area with 1,000 or more subscribers. However, within each cable system, one additional test point shall be added for every additional 12,500 subscribers or fraction thereof (e.g., 7 test points if 12,501 to 25,000 subscribers; 8 test points if 25,001 to 37,500 subscribers, etc.). In addition, ~~for technically integrated portions of cable systems that are not mechanically continuous (~~i.e.**e.g.,** ~~employing microwave connections),~~ at least one test point will be required for each portion of the cable system served by a technically integrated ~~microwave~~ hub, wire center, central office, or similar distribution center. The proof-of-performance test points chosen shall be balanced to represent all geographic areas served by the cable system and shall include at least one test point per technically integrated hub, wire center, central office, or similar distribution center **and ~~should~~** ~~shall~~ **include at least one test point in each local franchise area** with 1,000 or more subscribers**.** At least one-third of the test points shall be representative of subscriber terminals most distant from the system input and from each microwave receiver (if microwave transmissions are employed), in terms of cable length. The measurements may be taken at convenient monitoring points in the cable network ~~P~~**p**rovided that data shall be included to relate the measured performance of the system as would be viewed from a nearby subscriber terminal. For fiber optic systems, the cable system operator shall provide a permanently-mounted optical network terminal (ONT) at each test point. An identification of the instruments, including the makes, model numbers, and the most recent date of calibration, a description of the procedures utilized, and a statement of the qualifications of the person performing the tests shall also be included.

(2) Proof-of-performance tests to determine the extent to which a cable television system complies with the standards set forth in § 76.605~~(a)~~**(b)** (3), (4), and (5) shall be made on each of the NTSC or similar video channels of that system. Unless otherwise ~~as~~ noted, proof-of-performance tests for all other standards in § 76.605~~(a)~~**(b)** shall be made on a minimum of ~~four (4) channels plus one additional channel for every 100 MHz, or fraction thereof, of cable distribution system upper frequency limit (e.g., 5 channels for cable television systems with a cable distribution system upper frequency limit of 101 to 216 MHz; 6 channels for cable television systems with a cable distribution system upper frequency limit of 217–300 MHz; 7 channels for cable television systems with a cable distribution upper frequency limit to 300 to 400 MHz, etc.)~~ **five (5) channels for systems operating a total activated channel capacity of less than 550 MHz, and ten (10) channels for systems operating a total activated channel capacity of 550 MHz or greater.** The channels selected for testing must be representative of all the channels and frequencies within the cable television system and shall include: local broadcast television, public, educational and government (PEG), cable programming service channels; in the same proportion as those channels are present in the cable system; and include at least one channel in the frequency spectrum allocated to FM broadcasting (as described in §73.210 of this chapter) if the cable television operates on frequencies in that spectrum.

(i) The operator of each cable television system shall conduct semi-annual proof-of-performance tests of that system, to determine the extent to which the system complies with the technical standards set forth in § 76.605~~(a)~~**(b)**(4) as follows. The visual signal level on each channel shall be measured and recorded, along with the date and time of the measurement, once every six hours (at intervals of not less than five hours or no more than seven hours after the previous measurement), to include the warmest and the

coldest times, during a 24-hour period in January or February and in July or August.

(ii) The operator of each cable television system shall conduct triennial proof-of-performance tests of its system to determine the extent to which the system complies with the technical standards set forth in § 76.605~~(a)~~**(b)**(11).

(3) Proof-of-performance tests to determine the extent to which a cable television system complies with the standards set forth in § 76.605(c)~~(1)~~(2) and (c)(3) **shall be made on each of the QAM or similar video channels of that system. Unless otherwise as noted, proof-of-performance tests for all other standards in § 76.605(c) shall be made on a minimum of five (5) channels for systems operating a total activated channel capacity of less than 550 MHz, and ten (10) channels for systems operating a total activated channel capacity of 550 MHz or greater. The channels selected for testing must be representative of all the channels** and frequencies **within the cable television system** and shall include: local broadcast television, PEG, cable programming service channels in the same proportion as each type of channel in the cable system; include standard definition, high definition, three-dimensional, ultra-high definition channels etc. in the same proportion as each type of channel in the cable system; and include at least one channel in the frequency spectrum allocated to the FM broadcasting (as described in §73.210 of this chapter) if the cable television system operates on frequencies in that spectrum**.**

(i) The operator of each cable television system shall conduct semi-annual proof-of-performance tests of that system, to determine the extent to which the system complies with the technical standards set forth in §76.605(c)(3) as follows. The signal level on all channels shall be measured and recorded, along with the date and time of the measurement, once every six hours (at intervals of not less than five hours or no more than seven hours after the previous measurement), to include the warmest and the coldest times, during a 24-hour period in January or February and in July or August.

(4) For cable television systems which operate both NTSC or similar and QAM or similar channels, proof-of-performance tests to determine the extent to which the cable television system complies with § 76.605(b)(1), (2), (6)-(11) and 76.605(c)(1) shall be apportioned relative to the proportion of channels allocated to each transmission type, except that at no time shall less than two channels of a particular type be tested.

(c) * * *

* * * * *

10. Revise § 76.602(b)(7) to read as follows:

§ 76.602 Incorporation by Reference.

* * * * *

(b) **ATSC.** * * *

(1) ATSC A/65~~B~~**D**: "ATSC Standard: Program and System Information Protocol for Terrestrial Broadcast and Cable (Revision ~~B~~**D**)," ~~March 18, 2003~~**April 14, 2009**, IBR approved for §76.640.

(2) ATSC A/85:2011 "ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television," (July 25, 2011) ("ATSC A/85 RP"), IBR approved for §76.607.

(c) **CEA.** * * *

(1) CEA–542–~~B~~**C**, "CEA Standard: Cable Television Channel Identification Plan," July ~~2003~~**2009**, IBR approved for §76.605.

(2) CEA–931–~~A~~**C**, "Remote Control Command Pass-through Standard for Home Networking," ~~2003~~**2007**, IBR approved for §76.640.

(d) **SCTE.** * * *

(1) ANSI/SCTE 26 ~~2001~~**2010** (formerly DVS 194): "Home Digital Network Interface Specification with Copy Protection," ~~2001~~**2010**, IBR approved for §76.640.

(2) **ANSI/**SCTE 28 ~~2003~~**2012** (formerly DVS 295): "Host-POD Interface Standard," ~~2003~~**2012**, IBR approved for §76.640.

(3) **ANSI/**SCTE 40 ~~2003~~**2011** (formerly DVS 313), "Digital Cable Network Interface Standard," ~~2003~~**2011**, IBR approved for §**§ 76.605 and** 76.640.

(4) **ANSI/**SCTE 41 ~~2003~~**2011** (formerly DVS 301): "POD Copy Protection System," ~~2003~~**2011**, IBR approved for §76.640.

(5) ANSI/SCTE 54 ~~2003~~**2009** (formerly DVS 241), "Digital Video Service Multiplex and Transport System Standard for Cable Television," ~~2003~~**2009**, IBR approved for §76.640.

(6) ANSI/SCTE 65 ~~2002~~**2008** (formerly DVS 234), "Service Information Delivered Out-of-Band for Digital Cable Television," ~~2002~~**2008**, IBR approved for §76.640.

(e) * * *

* * * * *

11. Revise § 76.605 to read as follows

§ 76.605 Technical standards.

(a) The following requirements apply to the performance of a cable television system as measured at any subscriber terminal with a matched impedance at the termination point or at the output of the modulating or processing equipment (generally the headend) of the cable television system or otherwise noted. **The requirements of subsection (b) of this section are applicable to each NTSC or similar video downstream cable television channel in the system, the requirements of subsection (c) are applicable to each QAM or similar video downstream cable television channel in the system, and the requirements of subsection (d) are applicable to all downstream cable television channels in the system. Cable television systems utilizing other technologies to distribute programming must comply with subsection (e).**

(b) For each NTSC or similar video downstream cable television channel in the system:

(1)(i) The cable television channels delivered to the subscriber's terminal shall be capable of being received and displayed by TV broadcast receivers used for off-the-air reception of TV broadcast signals, as authorized under part 73 of this chapter; and

(ii) Cable television systems shall transmit signals to subscriber premises equipment on frequencies in accordance with the channel allocation plan set forth in ~~CEA-542-B~~**CEA-542-C**: "Standard: Cable Television Channel Identification Plan," (Incorporated by reference, see § 76.602).

(2) The aural center frequency of the aural carrier must be 4.5 MHz ±5 kHz above the frequency of the visual carrier at the output of the modulating or processing equipment of a cable television system, and at the subscriber terminal.

(3) The visual signal level, across a terminating impedance which correctly matches the internal impedance of the cable system as viewed from the subscriber terminal, shall not be less than 1 millivolt across an internal impedance of 75 ohms (0 dBmV). Additionally, as measured at the end of a 30 meter (100 foot) cable drop that is connected to the subscriber tap, it shall not be less than 1.41 millivolts across an internal impedance of 75 ohms (+3 dBmV). (At other impedance values, the minimum visual signal level, as viewed from the subscriber terminal, shall be the square root of 0.0133 (Z) millivolts and, as measured at the end of a 30 meter (100 foot) cable drop that is connected to the subscriber tap, shall be 2 times the square root of 0.00662(Z) millivolts, where Z is the appropriate impedance value.)

(4) The visual signal level on each channel, as measured at the end of a 30 meter cable drop that is connected to the subscriber tap, shall not vary more than 8 decibels within any six-month interval, which must include four tests performed in six-hour increments during a 24-hour period in July or August and during a 24-hour period in January or February, and shall be maintained within:

(i) 3 decibels (dB) of the visual signal level of any visual carrier within a 6 MHz nominal frequency separation;

(ii) 10 dB of the visual signal level on any other channel on a cable television system of up to 300 MHz of cable distribution system upper frequency limit, with a 1 dB increase for each additional 100 MHz of cable distribution system upper frequency limit (e.g., 11 dB for a system at 301-400 MHz; 12 dB for a system at 401-500 MHz, etc.); and

(iii) A maximum level such that signal degradation due to overload in the subscriber's receiver or terminal does not occur.

(5) The rms voltage of the aural signal shall be maintained between 10 and 17 decibels below the associated visual signal level. This requirement must be met both at the subscriber terminal and at the output of the modulating and processing equipment (generally the headend). For subscriber terminals that use equipment which modulate and remodulate the signal (e.g., baseband converters), the rms voltage of the aural signal shall be maintained between 6.5 and 17 decibels below the associated visual signal level at the subscriber terminal.

(6) The amplitude characteristic shall be within a range of ±2 decibels from 0.75 MHz to 5.0 MHz above the lower boundary frequency of the cable television channel, referenced to the average of the highest and lowest amplitudes within these frequency boundaries. The amplitude characteristic shall be measured at the subscriber terminal.

(7) The ratio of RF visual signal level to system noise shall not be less than 43 decibels. For class I cable television channels, the requirements of this section are applicable only to:

(i) Each signal which is delivered by a cable television system to subscribers within the predicted Grade B **or noise-limited service** contour**, as appropriate,** for that signal;

(ii) Each signal which is first picked up within its predicted Grade B **or noise-limited service** contour**, as appropriate**;

(iii) Each signal that is first received by the cable television system by direct video feed from a TV broadcast station, a low power TV station, or a TV translator station.

(8) The ratio of visual signal level to the rms amplitude of any coherent disturbances such as intermodulation products, second and third order distortions or discrete-frequency interfering signals not operating on proper offset assignments shall be as follows:

(i) The ratio of visual signal level to coherent disturbances shall not be less than 51 decibels for noncoherent channel cable television systems, when measured with modulated carriers and time averaged; and

(ii) The ratio of visual signal level to coherent disturbances which are frequency-coincident with the visual carrier shall not be less than 47 decibels for coherent channel cable systems, when measured with modulated carriers and time averaged.

(9) The terminal isolation provided to each subscriber terminal:

(i) Shall not be less than 18 decibels. In lieu of periodic testing, the cable operator may use specifications provided by the manufacturer for the terminal isolation equipment to meet this standard; and

(ii) Shall be sufficient to prevent reflections caused by open-circuited or short-circuited subscriber terminals from producing visible picture impairments at any other subscriber terminal.

(10) The peak-to-peak variation in visual signal level caused by undesired low frequency disturbances (hum or repetitive transients) generated within the system, or by inadequate low frequency response, shall not exceed 3 percent of the visual signal level. Measurements made on a single channel using a single unmodulated carrier may be used to demonstrate compliance with this parameter at each test location.

(11) The following requirements apply to the performance of the cable television system as measured at the output of the modulating or processing equipment (generally the headend) of the system:

(i) The chrominance-luminance delay inequality (or chroma delay), which is the change in delay time of the chrominance component of the signal relative to the luminance component, shall be within 170 nanoseconds.

(ii) The differential gain for the color subcarrier of the television signal, which is measured as the difference in amplitude between the largest and smallest segments of the chrominance signal (divided by the largest and expressed in percent), shall not exceed ±20%.

(iii) The differential phase for the color subcarrier of the television signal which is measured as the largest phase difference in degrees between each segment of the chrominance signal and reference segment (the segment at the blanking level of 0 IRE), shall not exceed ±10 degrees.

(c) For each downstream QAM or similar video downstream cable television channel in the system the technical requirements of ANSI/SCTE 40 2011 (Formerly DVS 313): "Digital Cable Network Interface Standard" (incorporated by reference, *see* § 76.602) shall apply, provided:

(1) For purposes of demonstrating compliance with proof-of-performance, the RF transmission characteristics of Table 4 shall be tested and recorded pursuant to §§ 76.601 and 76.1706 except that references to ANSI/SCTE 40 2011 in Table 4 are modified as follows:

(i) As an alternative to temporarily removing a channel from service to measure the carrier-to-noise-plus-interference ratio on that channel, per Item 4 of the Table, the modulation error ratio (MER) on the channel may be used in lieu of the carrier-to-noise-plus-interference ratio;

(ii) The minimum carrier-to-noise ratio for the measurement of AM-VSB analog transmissions, per Item 4 of the Table, shall be 46dB;

(iii) The manufacturer's phase-to-noise specifications of the modulator may be used to meet the requirements of Item 11 of the Table; and;

(iv) The carrier level at the terminal input, per Item 14 of the Table, shall be -10dBmV to +13dBmV for QAM systems; and

(v) Per Item 15 of the Table, the bit error ratio (BER) on each measured channel shall be at least 10^{-8}.

(2) For purposes of demonstrating compliance with proof-of-performance, the Adjacent Channel Characteristics of Table 6 and the Nominal Relative Carrier Power Levels of Table 5 shall be tested and recorded pursuant to §§ 76.601 and 76.1706.

(3) For purposes of demonstrating compliance with proof-of-performance, and the signal level on each channel in the system shall be tested and recorded pursuant to §§ 76.601 and 76.1706, and its value, as measured at the end of a 30 meter cable drop that is connected to the test point, shall not vary more than 8 decibels within any six-month interval, which must include four tests performed in six-hour increments during a 24-hour period in July or August and during a 24-hour period in January or February.

(d) As an exception to the general provision requiring measurements to be made at subscriber terminals, and without regard to the type of signals carried by the cable television system, signal leakage shall be limited as follows:

Frequencies	Signal leakage limit	Distance in meters (m)
Analog signals less than and including 54 MHz, and over 216 MHz	15 µV/m	30
Digital signals less than and including 54 MHz, and over 216 MHz	**13.1 µV/m**	**30**
Analog signals over 54 MHz up to and including 216 MHz	20 µV/m	3
Digital signals over 54 MHz up to and including 216 MHz	**17.4 µV/m**	**3**

Where analog NTSC or similar signals are measured in accordance with the procedures outlined in § 76.609(h).

(e) Cable television systems distributing signals by ~~using~~ methods ~~such as nonconventional coaxial cable techniques, noncoaxial copper cable techniques, specialized coaxial cable and fiber optical cable hybridization techniques or specialized compression techniques or specialized receiving devices~~, **other than 6 MHz NTSC or similar analog channels or 6 MHz QAM or similar channels on conventional coaxial or hybrid fiber-coaxial cable systems and** which, because of their basic design, cannot comply with one or more of the technical standards set forth in paragraph**s** ~~(a)~~ **(b) and (c)** of this section, may be permitted to operate~~: provided, That an adequate showing is made pursuant to §76.7 which establishes that the public interest is benefited. In such instances, the Commission may prescribe special technical requirements to ensure that subscribers to such systems are provided with an equivalent level of good quality service~~ **upon Commission approval on a case-by-case basis. To obtain Commission approval, the operator must submit to the Commission its own proof-of-performance plan for ensuring subscribers receive good quality signals.** Prior to submission of its plan to the Commission, the operator must notify the local franchising authority of its request for Commission approval of the plan

and must also provide the plan to the local franchising authority for review. The operator's submission to the Commission must include evidence that the plan was provided to the local franchising authority and any comments on the plan made by the franchising authority.

Note 1: Local franchising authorities of systems serving fewer than 1000 subscribers may adopt standards less stringent than those in § 76.605(b) and (c). Any such agreement shall be reduced to writing and be associated with the system's proof-of-performance records.

Note 2: For systems serving rural areas as defined in § 76.5, the system may negotiate with its local franchising authority for standards less stringent than those in §§ 76.605~~(a)~~**(b)**(3), 76.605~~(a)~~ **(b)**(7), 76.605~~(a)~~**(b)**(8), 76.605~~(a)~~**(b)**(10) and 76.605~~(a)~~**(b)**(11). Any such agreement shall be reduced to writing and be associated with the system's proof-of-performance records.

Note 3: The requirements of this section shall not apply to devices subject to the TV interface device rules under part 15 of this chapter.

~~Note 4: Should subscriber complaints arise from a system failing to meet §76.605(a)(6) prior to December 30, 1999, the cable operator will be required to provide a converter that will allow the system to meet the standard immediately at the complaining subscriber's terminal. Further, should the problem be found to be system-wide, the Commission may order all converters on the system be changed to meet the standard.~~

Note ~~5~~**4**: Should subscriber complaints arise from a system failing to meet § 76.605~~(a)~~**(b)**(10), the cable operator will be required to remedy the complaint and perform test measurements on § 76.605~~(a)~~**(b)**(10) containing the full number of channels as indicated in § 76.601(b)(2) at the complaining subscriber's terminal. Further, should the problem be found to be system-wide, the Commission may order that the full number of channels as indicated in § 76.601(b)(2) be tested at all required locations for future proof-of-performance tests.

Note ~~6~~**5**: No State or franchising authority may prohibit, condition, or restrict a cable system's use of any type of subscriber equipment or any transmission technology.

12. Revise § 76.606 to read as follows:

§ 76.606 Closed captioning.

(a) ~~As of June 30, 1992,~~ (1) For QAM or similar video systems, the operator of each cable television system shall not take any action to remove or alter closed captioning data; and (2) for NTSC or similar video systems, t~~T~~he operator of each cable television system shall not take any action to remove or alter closed captioning data contained on line 21 of the vertical blanking interval.

(b) ~~As of July 1, 1993,~~ (1) For QAM or similar video systems the operator of each cable television system shall deliver intact closed-captioning data as it arrives at the headend or from another origination source to the subscriber terminals and (when so delivered to the cable system) in a format that can be recovered and displayed by decoders meeting §79.101 of this chapter; and (2) for NTSC or similar video systems, t~~T~~he operator of each cable television system shall deliver intact closed captioning data contained on line 21 of the vertical blanking interval, as it arrives at the headend or from another origination source, to subscriber terminals and (when so delivered to the cable system) in a format that can be recovered and displayed by decoders meeting ~~§15.119~~ **§79.101** of this chapter.

13. Revise § 76.610 to read as follows:

§ 76.610 Operation in the frequency bands 108–137 MHz and 225–400 MHz – scope of application.

The provisions of §§~~76.605(a)(12)~~**76.605(d)**, 76.611, 76.612, 76.613, 76.614, 76.616, 76.617, 76.1803 and 76.1804 are applicable to all MVPDs (cable and non-cable) transmitting **analog** carriers or other signal components carried at an average power level equal to or greater than 10^{-4} watts across a 25 kHz bandwidth in any 160 microsecond period **or transmitting digital carriers or other signal components at an average power level of 75.85 microwatts across a 25 kHz bandwidth in any 160 microsecond period** at any point in the cable distribution system in the frequency bands 108–137 and 225–400 MHz for any purpose. Exception: Non-cable MVPDs serving less than 1000 subscribers and less than 1000 units do not have to comply with § 76.1803.

14. Revise § 76.611 to read as follows:

§ 76.611 Cable television basic signal leakage performance criteria.

(a) No cable television system shall commence or provide service in the frequency bands 108-137 and 225-400 MHz unless such systems is in compliance with one of the following cable television basic signal leakage performance criteria:

(1) prior to carriage of signals in the aeronautical radio bands and at least once each calendar year, with no more than 12 months between successive tests thereafter, based on a sampling of at least 75% of the cable strand, and including any portion of the cable system which are known to have or can reasonably be expected to have less leakage integrity than the average of the system, the cable operator demonstrates compliance with a cumulative signal leakage index by showing either that (i) 10 log I_{3000} is equal to or less than −7 for **analog** systems and **equal to or less than –8.2 for digital systems** or (ii) 10 log I_{∞} is equal to or less than 64 for **analog** systems and **equal to or less than 62.8 for digital systems**, using one of the following formula, **except that no system of diameter greater than 160 kilometers may utilize I_{3000}**:

$$I_{3000} = \frac{1}{\theta}\sum_{i=1}^{n}\frac{E_i^2}{R_i^2},$$

$$I_{\infty} = \frac{1}{\theta}\sum_{i=1}^{n}E_i^2,$$

where:

$$R_i^2 = r_i^2 + (3000)^2$$

r_i is the distance (in meters) between the leakage source and the center of the cable television system;

θ is the fraction of the system cable length actually examined for leakage sources and is equal to the strand kilometers (strand miles) of plant tested divided by the total strand kilometers (strand miles) in the plant;

R_i is the slant height distance (in meters) from leakage source i to a point 3000 meters above the center of the cable television system;

E_i is the electric field strength in microvolts per meter (μV/m) measured 3 meters from the leak i; and

n is the number of leaks found of field strength equal to or greater than 50 μV/m for **analog** leaks measured pursuant to §76.609(h) **or 43.6 μV/m for digital leaks**.

The sum is carried over all leaks i detected in the cable examined; or

(2) prior to carriage of signals in the aeronautical radio bands and at least once each calendar year, with no more than 12 months between successive tests thereafter, the cable operator demonstrates by measurement in the airspace that at no point does the field strength generated by the cable system exceed 10 microvolts per meter (μV/m) RMS for **an offset analog signal or 8.7 microvolts per meter (μV/m) RMS for a digital signal** at an altitude of 450 meters above the average terrain of the cable system. The measurement system (including the receiving antenna) shall be calibrated against a known field of 10 μV/m RMS produced by a well characterized antenna consisting of orthogonal resonant dipoles, both parallel to and one quarter wavelength above the ground plane of a diameter of two meters or more at ground level. The dipoles shall have centers collocated and be excited 90 degrees apart. The half-power bandwidth of the detector shall be 25 kHz. If an aeronautical receiver is used for this purpose it shall meet the standards of the Radio Technical Commission for Aeronautics (RCTA) for aeronautical communications receivers. The aircraft antenna shall be horizontally polarized. Calibration shall be made in the community unit or, if more than one, in any of the community units of the physical system within a reasonable time period to performing the measurements. If data is recorded digitally the 90th percentile level of points recorded over the cable system shall not exceed **8.7 μV/m or** 10 μV/m RMS as indicated above; if analog recordings is used the peak values of the curves, when smoothed according to good engineering practices, shall not exceed **8.7 μV/m or** 10 μV/m RMS **for digital or analog leakage, respectively**.

(b) In paragraphs (a)(1) and (a)(2) of this section the unmodulated test signal used for analog leakage measurements on the cable plant shall: (1) Be within the VHF aeronautical band 108-137 MHz or any other frequency in which the results can be correlated to the VHF aeronautical band and (2) have an average power level equal to the average power level of the strongest cable television carrier on the system.

(c) In paragraph (a)(1) and (2) of this section, if a modulated test signal is used for analog leakage measurements, the test signal and detector technique must, when considered together, yield the same result as though an unmodulated test signal were used in conjunction with a detection technique which would yield the RMS value of said unmodulated carrier.

(d) If a sampling of at least 75% of the cable strand (and including any portions of the cable system which are known to have or can reasonably be expected to have less leakage integrity than the average of the system) as described in paragraph (a)(1) cannot be obtained by the cable operator or is otherwise not reasonably feasible, the cable operator shall perform the airspace measurements described in paragraph (a)(2).

(e) Prior to providing service to any subscriber on a new section of cable plant, the operator shall show compliance with either: (1) The basic signal leakage criteria in accordance with paragraph (a)(1) or (a)(2) of this section for the entire plant in operation or (2) a showing shall be made indicating that no individual leak in the new section of the plant exceeds 20 μV/m at 3 meters in accordance with § 76.609 ~~fo~~ **of** the Rules for **analog systems or 17.4 μV/m at 3 meters for digital systems**.

(f) Notwithstanding paragraph (a) of this section, a cable operator shall be permitted to operate on any frequency which is offset pursuant to §76.612 in the frequency band 108–137 MHz for the purpose of demonstrating compliance with the cable television basic signal leakage performance criteria.

15. Revise § 76.612 to read as follows:

§ 76.612 Cable television frequency separation standards.

All cable television systems which operate **analog NTSC or similar channels** in the frequency bands 108-137 MHZ and 225-400 MHz shall comply with the following frequency separation standards **for each NTSC or similar channel:**

(a) * * *

* * * * *

16. Revise § 76.614 to read as follows:

§ 76.614 Cable television regular monitoring.

Cable television operators transmitting carriers in the frequency bands 108-137 and 225-400 MHz shall provide for a program of regular monitoring for signal leakage by substantially covering the plant every three months. The incorporation of this monitoring program into the daily activities of existing service personnel in the discharge of their normal duties will generally cover all portions of the system and will therefore meet this requirement. Monitoring equipment and procedures utilized by a cable operator shall be adequate to detect a leakage source from an analog signal which produces a field strength in these bands of 20 μV/m or greater at a distance of 3 meters **and from a digital signal which produces a field strength in these bands of 17.4 μV/m or greater at a distance of 3 meters**. During regular monitoring, any analog leakage source which produces a field strength of 20 μV/m or greater at a distance of 3 meters **or digital leakage source which produces a field strength of 17.4 μV/m or greater at a distance of 3 meters** in the aeronautical radio frequency bands shall be noted and such leakage sources shall be repaired within a reasonable period of time.

Note 1 to § 76.614: Section 76.1706 contains signal leakage recordkeeping requirements applicable to cable operators.

17. Revise § 76.640(b)(1)(i) to read as follows:

§ 76.640 Support for unidirectional digital cable products on digital cable systems.

(a) * * *

(b) ~~No later than July 1, 2004,~~ Cable operators shall support unidirectional digital cable products, as defined in §15.123 of this chapter, through the provisioning of Point of Deployment modules (PODs) and services, as follows:

(1) Digital cable systems with an activated channel capacity of 750 MHz or greater shall comply with the following technical standards and requirements:

(i) **ANSI**/SCTE 40 ~~2003~~**2011** (formerly DVS 313): "Digital Cable Network Interface Standard" (incorporated by reference, see §76.602), ~~provided however that with respect to Table B.11, the Phase Noise requirement shall be −86 dB/Hz, and also~~ provided that the "transit delay for most distant customer" requirement in Table ~~B.3~~ **4.3** is not mandatory.

(ii) **ANSI/**SCTE 65 ~~2002~~**2008** (formerly DVS 234): "Service Information Delivered Out-of-Band for Digital Cable Television" (incorporated by reference, see §76.602), provided however that the referenced Source Name Subtable shall be provided for Profiles 1, 2, and 3.

(iii) **ANSI/**SCTE 54 ~~2003~~**2009** (formerly DVS 241): "Digital Video Service Multiplex and Transport System Standard for Cable Television" (incorporated by reference, see §76.602).

(iv) For each digital transport stream that includes one or more services carried in-the-clear, such transport stream shall include virtual channel data in-band in the form of ATSC A/65~~B~~**D**: "ATSC Standard: Program and System Information Protocol for Terrestrial Broadcast and Cable (Revision ~~B~~**D**)"

(incorporated by reference, see §76.602), when available from the content provider. With respect to in-band transport:

(A) * * *

(B) * * *

(C) The format of event information data format shall conform to ATSC A/65~~B~~**D**: "ATSC Standard: Program and System Information Protocol for Terrestrial Broadcast and Cable (Revision ~~B~~**D**)" (incorporated by reference, see §76.602);

(D) * * *

(E) * * *

(v) When service information tables are transmitted out-of-band for scrambled services:

(A) The data shall, at minimum, describe services carried within the transport stream carrying the PSIP data itself;

(B) A virtual channel table shall be provided via the extended channel interface from the POD module. Tables to be included shall conform to **ANSI**/SCTE 65 ~~2002~~**2008** (formerly DVS 234): "Service Information Delivered Out-of-Band for Digital Cable Television" (incorporated by reference, see §76.602).

(C) Event information data when present shall conform to **ANSI/SCTE 65 2008** (formerly DVS 234): "Service Information Delivered Out-of-Band for Digital Cable Television" (incorporated by reference, see §76.602) (profiles 4 or higher).

(D) * * *

(E) * * *

(2) All digital cable systems shall comply with:

(i) **ANSI**/SCTE 28 ~~2003~~**2012** (formerly DVS 295): "Host-POD Interface Standard" (incorporated by reference, see §76.602).

(ii) SCTE 41 ~~2003~~**2011** (formerly DVS 301): "POD Copy Protection System" (incorporated by reference, see §76.602).

(3) * * *

* * * * *

18. Amend § 76.1204 to revise paragraph (a), and delete paragraph (e) and redesignate (f) as (e) as follows:

§ 76.1204 Availability of equipment performing conditional access or security functions.

(a)(1) A multichannel video programming distributor that utilizes navigation devices to perform conditional access functions shall make available equipment that incorporates only the conditional access functions of such devices. ~~Commencing on July 1, 2007,~~ No multichannel video programming distributor

subject to this section shall place in service new navigation devices for sale, lease, or use that perform both conditional access and other functions in a single integrated device.

* * * * *

~~(e) The requirements of this section shall become applicable on July 1, 2000.~~

(e) Paragraphs (a)(1), (b), and (c) of this section shall not apply to the provision of any navigation device that:

(1) Employs conditional access mechanisms only to access analog video programming;

(2) Is capable only of providing access to analog video programming offered over a multichannel video programming distribution system; and

(3) Does not provide access to any digital transmission of multichannel video programming or any other digital service through any receiving, decoding, conditional access, or other function, including any conversion of digital programming or service to an analog format.

19. Revise § 76.1205(b) to read as follows:

§76.1205 CableCARD support.

* * * * *

(b) A multichannel video programming provider that is subject to the requirements of ~~§76.1204(a)(1)~~ **Section 76.640** must:

* * *

(5) Separately disclose to consumers in a conspicuous manner with written information provided to customers in accordance with §76.1602, with written or oral information at consumer request, and on Web sites or billing inserts;

(i) Any assessed fees for the rental of single and additional CableCARDs and the rental of operator-supplied navigation devices; and,

(ii) If such provider includes equipment in the price of a bundled offer of one or more services, the fees reasonably allocable to:

(A) The rental of single and additional CableCARDs; and

(B) The rental of operator-supplied navigation devices.

(iii) CableCARD rental fees shall be priced uniformly throughout a cable system by such provider without regard to the intended use in operator-supplied or consumer-owned equipment. No service fee shall be imposed on a subscriber for support of a subscriber-provided device that is not assessed on subscriber use of an operator-provided device.

(iv) For any bundled offer combining service and an operator-supplied navigation device into a single fee, including any bundled offer providing a discount for the purchase of multiple services, such provider shall make such offer available without discrimination to any customer that owns a navigation device, and, to

the extent the customer uses such navigation device in lieu of the operator-supplied equipment included in that bundled offer, shall further offer such customer a discount from such offer equal to an amount not less than the monthly rental fee reasonably allocable to the lease of the operator-supplied navigation device included with that offer. For purposes of this section, in determining what is "reasonably allocable," the Commission will consider in its evaluation whether the allocation is consistent with one or more of the following factors:

(A) An allocation determination approved by a local, state, or Federal government entity;

(B) The monthly lease fee as stated on the cable system rate card for the navigation device when offered by the cable operator separately from a bundled offer; and

(C) The actual cost of the navigation device amortized over a period of no more than 60 months.

(c) A cable operator shall not provide misleading information regarding the ability of navigation devices to access switched digital channels.

(d) CableCARDs must be able to be installed by customers without cable operator truck rolls.

20. Amend § 76.1508(a) to read as follows:

§76.1508 Network non-duplication.

(a) Sections 76.92 through ~~76.97~~ **76.95** shall apply to open video systems in accordance with the provisions contained in this section.

* * * * *

21. Amend § 76.1509 to read as follows:

§76.1509 Syndicated program exclusivity.

(a) Sections ~~76.151~~ **76.101** through ~~76.163~~ **76.110** shall apply to open video systems in accordance with the provisions contained in this section.

(b) Any provision of ~~§76.151~~ **§76.101** that refers to a "cable community unit" shall apply to an open video system.

(c) Any provision of ~~§76.155~~ **§76.105** that refers to a "cable system operator" or "cable television system operator" shall apply to an open video system operator. Any provision of ~~§76.155~~ **§76.105** that refers to a "cable system" or "cable television system" shall apply to an open video system except ~~§76.155(c)~~ **§76.105(c)** which shall apply to an open video system operator. Open video system operators shall make all notifications and information regarding exercise of syndicated program exclusivity rights immediately available to all appropriate video programming provider on the system. An open video system operator shall not be subject to sanctions for any violation of these rules by an unaffiliated program supplier if the operator provided proper notices to the program supplier and subsequently took prompt steps to stop the distribution of the infringing program once it was notified of a violation.

(d) Any provision of ~~§76.156~~ **§76.106** that refers to a "cable community" shall apply to an open video system community. Any provision of ~~§76.156~~ **§76.106** that refers to a "cable community unit" or "community unit" shall apply to an open video system or that portion of an open video system that operates or will operate within a separate and distinct community or municipal entity (including

unincorporated communities within unincorporated areas and including single, discrete unincorporated areas). Any provision of ~~§§76.156 through 76.158, and 76.163~~ **§§76.106 through 76.108 that** refers to a "cable system" shall apply to an open video system.

(e) Any provision of ~~§76.159~~ **§76.109** that refers to "cable television" or a "cable system" shall apply to an open video system.

(f) Any provision of ~~§76.161~~ **§76.110** that refers to a "community unit" shall apply to an open video system or that portion of an open video system that is affected by this rule.

22. Revise § 76.1510 to read as follows:

§76.1510 Application of certain Title VI provisions.

The following sections within part 76 shall also apply to open video systems: §§76.71, 76.73, 76.75, 76.77, 76.79, 76.1702, and 76.1802 (Equal Employment Opportunity Requirements); §§76.503 and 76.504 (ownership restrictions); §76.981 (negative option billing); and §§76.1300, 76.1301 and 76.1302 (regulation of carriage agreements); §~~76.611~~**76.610** (signal leakage restrictions); ~~§76.1803 and 76.1804 (signal leakage monitoring and aeronautical frequency notifications);~~ provided, however, that these sections shall apply to open video systems only to the extent that they do not conflict with this subpart S. Section 631 of the Communications Act (subscriber privacy) shall also apply to open video systems.

23. Revise § 76.1601 to read as follows:

§76.1601 Deletion or repositioning of broadcast signals.

~~Effective April 2, 1993,~~(a) A cable operator shall provide written notice to any broadcast television station and franchisee at least 30 days prior to either deleting from carriage or repositioning that station. Such notification shall also be provided to subscribers of the cable system.

(b)(1) Any repositioning of a public, educational, and governmental (PEG) channel by a cable operator must be agreed to by the franchisee; and

(2) If and when a franchisee agrees to the repositioning of a PEG channel, notification shall be provided to subscribers of the cable system at least 30 days prior to the repositioning of the channel.

Note 1 to §76.1601: * * *

24. Revise § 76.1602 (b) to read as follows:

§76.1602 Customer service—general information.

* * * * *

(b) ~~Effective July 1, 1993,~~ The cable operator shall provide written information on each of the following areas at the time of installation of service, at least annually to all subscribers, and at any time upon request:

(1) * * *

* * * * *

25. Remove §§ 76.1610(f) and (g).

§76.1610 Change of operational information.

The Operator shall inform the Commission on FCC Form 324 whenever there is a change of cable television system operator; change of legal name, change of the operator's mailing address or FCC Registration Number (FRN); or change in the operational status of a cable television system. Notification must be done within 30 days from the date the change occurs and must include the following information, as appropriate:

(a) * * *

* * * * *

~~(f) The operator's FCC Registration Number (FRN) as required under part 1, subpart W of this chapter.~~

~~(g) The FCC Registration Number (FRN).~~

26. Revise § 76.1701(d) to read as follows:

§76.1701 Political file.

* * * * *

(d) Where origination cablecasting material is a political matter or matter involving the discussion of a controversial issue of public importance and a corporation, committee, association or other unincorporated group, or other entity is paying for or furnishing the matter, the system operator shall, in addition to making the announcement required by ~~§76.1616(a)~~ **§76.1615**, require that a list of the chief executive officers or members of the executive committee or of the board of directors of the corporation, committee, association or other unincorporated group, or other entity shall be made available for public inspection at the local office of the system. Such lists shall be kept and made available for two years.

27. Revise § 76.1704 to read as follows:

§76.1704 Proof-of-performance test data.

(a) The proof-of-performance tests required by § 76.601 shall be maintained both electronically and on file at the operator's local business office for at least five years. The test data on file at the local business office shall be made available for inspection by the Commission or the local franchiser, upon request.

* * * * *

~~27.~~28. Amend § 76.1804 to read as follows:

§ 76.1804 Aeronautical Frequencies Notification

An MVPD shall notify the Commission before transmitting any carrier of other signal component with an average power level across a ~~25 kHz bandwidth in any 160 microsecond time period equal to or greater than 10^{-4} watts~~ **30 kHz bandwidth in any 2.5 millisecond time period equal to or greater than 10^{-5} watts** at any point in the cable distribution system on any new frequency or frequencies in the aeronautical radio frequency bands (108-137 MHz, 225-400 MHz). The notification shall be made on

FCC Form 321. Such notification shall include:

(a) * * *

* * * * *

~~28.~~29. Remove and Reserve § 76.1909.

§ 76.1909 [Reserved]

APPENDIX C

Selected Tables from ANSI/SCTE 40 2011

The following tables are reprinted from ANSI/SCTE 40 2011 for convenience. The original versions of these tables can be found in the complete version of the standard on the Society of Cable Telecommunications Engineers website.[1] FAT stands for Forward Application Transport Channel, and is the standard digital video channel carried by the cable system. Additionally, the standard contains definitions of CTB, CSO, and FDC, which have been footnoted here, and explanatory text for Tables 4, 5 and 6, which is not included.

Table 4. Analog and FAT Channel: RF Transmission Characteristics

1.	RF Channel Spacing	6 MHz
2.	RF Frequency Range	54 MHz to 1002 MHz IRC/HRC/Standard Channel Plans.
3.	Transit delay from headend to most distant customer	< 0.800 ms (typically much less)
4.	Carrier-to-noise-plus-interference ratio, C/(N+I), in a 6-MHz band where C/(N+I) includes the simultaneous presence of all additive impairments in the 6-MHz channel bandwidth including CTB, CSO, and other forms of discrete interference. The carrier, noise, and interference are all subject to any linear channel distortions (micro-reflections) present in the transmission path. C/N (analog channels)	Not less than 27 dB for 64 QAM; 33 dB for 256 QAM; ~~43~~46 dB for AM-VSB analog
5.	CTB[2]	Not greater than -53 dBc referenced to inband carrier levels for analog channels.
6.	CSO[3]	Not greater than -53 dBc referenced to inband carrier levels for analog channels
7.	Carrier-to-any other discrete interference (ingress)	Not greater than -53 dBc
8.	AM Hum Modulation	Not greater than 3% p-p
9.	Group Delay Variation	< 0.37 µs/MHz across the 6-MHz channel
10.	Chroma / Luma Delay	≤ 170 ns (AM-VSB analog)
11.	Phase Noise	< -86 dBc/Hz @ 10 kHz offset (relative to the center of QAM signal spectrum)
12.	Maximum Amplitude Variation across the 6-MHz channel (digital channels) Maximum Amplitude Variation across the 6-MHz	< 6 dB p-p < 4 dB p-p

[1] Society of Cable Telecommunications Engineers, http://www.scte.org/standards/.

[2] CTB is defined as the "Composite Triple Beat," a third order distortion caused by mixing three carriers (A+B-C) that falls on the fundamental of a carrier.

[3] CSO is defined as the "Composite Second Order," the sum effect of all second order distortion products.

	channel (analog channels)	
13.	Bound for a single dominant micro-reflection	-10 dB at < 0.5 µs -15 dB at < 1.0 µs -20 dB at < 1.5 µs -30 dB at < 4.5 µs Micro-reflections longer than 4.5 microseconds are included under item 4 (of this table) as a contributor to the interference I in C/(N+I)). Micro-reflections, if present, shall not cause the channel Group Delay Variation and Maximum Amplitude Variation in Table 4.9 and 4.12 respectively to be exceeded.
14.	Carrier level at the terminal input	64 QAM: -~~15~~10 dBmV to + ~~15~~13 dBmV 256 QAM: -~~12~~10 dBmV to +~~15~~13 dBmV Analog Visual Carrier (c): 0 dBmV to +15 dBmV Analog Aural Carrier: -10 dBc to –17 dBc
15.	Bit Error Ratio (BER)	<= 10^{-8}

Table 5. Nominal Relative Carrier Power Levels	
Analog NTSC	0 dB (reference level)
256 QAM FAT	-5 ± 2 dB
QPSK FDC[4]	-8 ± 5 dB
64 QAM FAT	-10 ± 2 dB

Table 6. Adjacent Channel Characteristics

[4] FDC is defined as “Forward Data Channel,” and is a data channel carried from the headend to the terminal device in a modulated channel at a rate of 1.544 to 3.088 Mbps.

	Desired (D) Channel Modulation	*Undesired (U) Adjacent Channel Modulation*	*Worst Case D/U Ratio*
1	Analog NTSC	64 QAM	+2 dB
2	Analog NTSC	256 QAM	-3 dB
3	Analog NTSC	QPSK FDC	-3 dB
4	64 QAM FAT	Analog NTSC	-18 dB
5	64 QAM FAT	256 QAM	-15 dB
6	64 QAM FAT	QPSK FDC	-15 dB
7	256 QAM FAT	Analog NTSC	-13 dB
8	256 QAM FAT	64 QAM	-5 dB
9	256 QAM FAT	QPSK FDC	-10 dB
10	QPSK FDC	Analog NTSC	-19 dB
11	QPSK FDC	64 QAM	-11 dB
12	QPSK FDC	256 QAM	-16 dB
13	Analog NTSC	Analog NTSC	-3 dB
14	64 QAM FAT	64 QAM	-6 dB
15	256 QAM FAT	256 QAM	-6 dB
16	QPSK FDC	QPSK FDC	-6 dB

• Independent of the D/U ratios, the C/(N+I) and the absolute signal levels shall meet the requirements for those parameters as described elsewhere in the specification.

• Good engineering practice normally requires that only a single FDC channel be adjacent to a FAT channel.